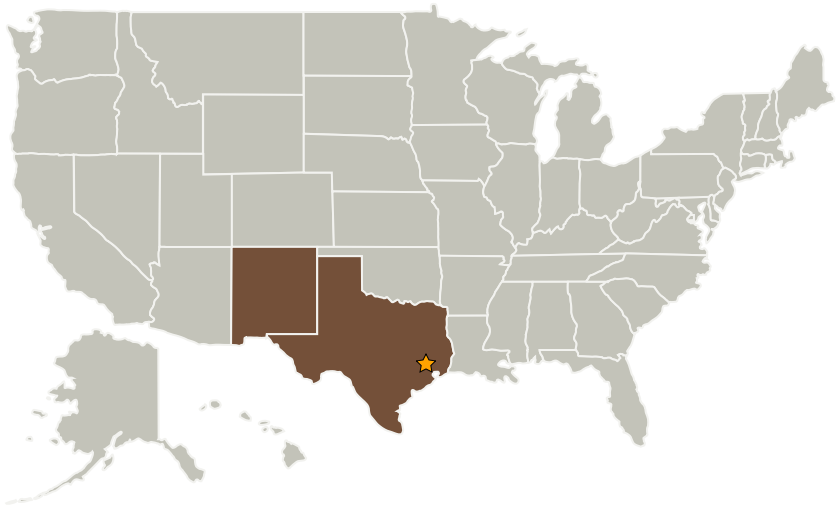
SmartTopo Intelligent Real-Time Topographic Information Collection System, Phase I

Completed Technology Project (2004 - 2004)

Project Introduction

This program will result in the creation of the first technology designed to provide robotic explorer vehicles with the ability to ?learn and remember? the terrain over which they travel. While it is described as a geographic information system it will be used to explore artificial satellites like the space shuttle as well as planet surfaces. The SmartTopo software system will be developed to be portable and robust so that it can be used by NASA in a variety of general and embedded applications. It will be used in robotic inspection of spacecraft on-orbit, and as such will aid NASA in Return to Flight. The idea is simple ? a robot explorer (aircraft, spacecraft, satellite, planetary rover or submersible) will be sent forth with an internal digital map of the topography of an area to explore. As exploration proceeds sensors on the explorer will collect data as always, but now the SmartTopo software will process the data and update the original digital map data in real time. This will result in a higher resolution topographic model of the surface area over which the explorer is collecting data.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Rapid Imaging Software, Inc.	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Albuquerque, New Mexico

Primary U.S. Work Locations	
New Mexico	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Mike Abernathy

Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.1 Situational and Self Awareness
    - TX10.1.3 Knowledge and Model Building